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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,415	09/10/2003	Ganesh Balamurugan	884.G57US1	5839

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SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.  
P.O. BOX 2938  
MINNEAPOLIS, MN 55402

EXAMINER
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PANWALKAR, VINEETA S

ART UNIT	PAPER NUMBER
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2611

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/06/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

2X

<b>Office Action Summary</b>	<b>Application No.</b> 10/660,415	<b>Applicant(s)</b> BALAMURUGAN ET AL.	
	<b>Examiner</b> Vineeta S. Panwalkar	<b>Art Unit</b> 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 January 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-11 is/are allowed.
- 6) ☒ Claim(s) 12,18 is/are rejected.
- 7) ☒ Claim(s) 13-17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 January 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/3/06</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Amendment*

- 1a. In view of the amendment submitted 1/9/07, the 35 U.S.C. 101 rejections of claims 1-11 is withdrawn.
- 1b. The indicated allowability of claims 12 and 18 is withdrawn in view of the newly discovered reference(s) to Bologna et al. (US 7079576 B2, hereinafter, Bologna) and Jaussi et al. (US 6621330 B1), hereinafter, Jaussi . Rejections based on the newly cited reference(s) follow.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 12 is rejected under 35 U.S.C. 102(e) as being anticipated by Bologna.

Art Unit: 2611

2a. Regarding claim 12, Bologna discloses adaptive fractionally spaced equalizer (FSE, see Fig. 5) wherein is disclosed a method to calibrate a scale factor in an adaptive equalizer, the scale factor being used to multiply a sequence of desired voltages used in updating the equalizer (scalar is interpreted as equalizer coefficient because it weighs (multiplies) the voltages used in updating equalizer) during a training sequence, the method comprising:

- updating the adaptive equalizer over the training sequence (Fig. 5, block 507 performs updating of equalizer during training (See Fig.9 and Column 12, lines 40-45));
- counting the number of numerical overflows occurring while updating the adaptive equalizer over the training sequence (Fig. 5, block 521 comprises an overflow counter and is interpreted as performing claimed counting (See Fig. 8, Column 11, lines 17-28));
- increasing the scale factor by a first increment if the number of numerical overflows and a threshold satisfy a first relationship. (See Column 11, line 17 – column 12, line 10. When the incremental count in the register 804 exceeds the value (claimed threshold) specified by P0 810 the overflow test 806 results in a binary TRUE, and switches S3 801 and S4 807 are opened. The increment register 804 is then set to zero and switch S5 808 is closed to allow the overflow test 806 to use the value given by parameter P1 811 as the new threshold of the maximum count. As the update of the joint process equalizer continues, the overflow counter 802 starts counting again from 1, but counts

this time to the value given by P1 811. During this counting switch S3 801 remains in an open position to keep the constraint update from updating the equalizer weights. The output of 521 is sent to the equalizer weight update algorithm. Thus, the value of increment register 804 dictates the weight adjustment rate based on whether the overflow counter has exceed a certain value or not and is hence interpreted as claimed calibration of scale factor, wherein the equalizer weight is interpreted as claimed scale factor).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35

U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35  
U.S.C. 103(a).

3. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bologna  
in view of Jaussi.

- 3a. Regarding claim 18, Bologna shows all the limitations claimed, but fails to  
explicitly mention if the voltages may be differential.

However, in the same filed of endeavor, Jaussi shows discrete filter used for  
equalization wherein the voltages that are used in updating the equalizer are  
differential voltages. (See abstract).

Thus, it would have been obvious to a person of ordinary skill in the art to use  
differential voltages in equalizer because it results in a high signal-to-noise ratio.  
(Column 1, lines 30-40).

***Allowable Subject Matter***

4. Claims 1-11 are allowed.

The following is an examiner's statement of reasons for allowance:

- 4a. Regarding claims 1 and 9, prior art of record fails to shows a circuit to calibrate a  
scalar in an adaptive equalizer during a training sequence comprising the  
discrete FIR filter, data generator, filter increment generator, summer and over

flow counter used to calibrate said scalar, exactly as claimed (in combination with each and every other limitation of the claims).

- 4b. Claims 2-8 and 10, 11 are allowed as being dependent on claims 1 and 9.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

5. Claim 13-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

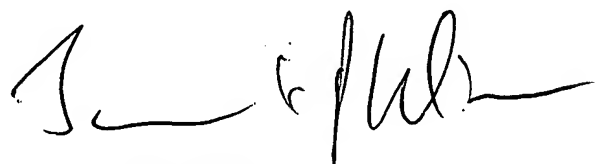
6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Thi et al. (US 6985492 B1) show in Figs 17 B and C, filter coefficient update based on data buffer overflow.
- Hyatt (US 4491930) shows in Fig. 5A increment and decrement methods for a scale factor during training sequence (pilot).

**Contact Information**

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vineeta S. Panwalkar whose telephone number is 571-272-8561. The examiner can normally be reached on M-F 8:30-5:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on 571-272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.
- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

V8



JAY K. PATEL  
SUPERVISORY PATENT EXAMINER